

A NEW GENUS OF PROSCIURINE RODENT (MAMMALIA:
RODENTIA: APLODONTIDAE) FROM THE
OLIGOCENE (ORELLAN) OF MONTANA

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ABSTRACT

A new genus and species of prosciurine from the Orellan of Montana, *Pseudallomys nexodens*, is characterized by a complex of small lophules in the basins of the lower cheek teeth, a condition considered parallel to that of allomyines. Its closest relationships appear to be with the Arikareean prosciurine *Downsimus*.

INTRODUCTION

Recently, several genera and species of primitive aplodontids have been described from the White River Group of Nebraska (Korth, 1986, 1989). Recognition of these new taxa has greatly increased the known diversity of Orellan and Whitneyan aplodontids. All of these species have been referred at least questionably to the Prosciurinae, the possible stem group of the Aplodontidae. The additional Orellan genus and species of aplodontid from Montana described below increases this diversity.

Dental terminology follows that of Wood and Wilson (1936) with modifications suggested by Rensberger (1975:fig. 1b).

SYSTEMATIC PALEONTOLOGY

Order Rodentia Bowdich, 1821

Family Aplodontidae Trouessart, 1897

Subfamily Prosciurinae Wilson, 1949

Genus *Pseudallomys*, new genus

Type and only known species.—*P. nexodens* n. sp.

Range.—Orellan (late early Oligocene of Berggren et al., 1985; early Oligocene of Swisher and Prothero, 1990) of Montana.

Diagnosis.—Intermediate-sized prosciurine; lower molars with complex network of lophules in basins, anterior cingulid anterior to protoconid, anteroposteriorly compressed metaconid, complete hypolophid, broad shelf at base of crown buccal to large mesoconid, doubled mesostylid (at least on M_2 – M_3), long buccally running lophule from both mesostylids, and large hypoconulid; molars increase in size from M_1 to M_3 .

Etymology.—Greek, *pseudos*, false; *Allomys*, a rodent which superficially resembles this taxon.

Pseudallomys nexodens, new species

(Fig. 1, Table 1)

Type and only known specimen.—Carnegie Museum specimen (CM) 11898, partial right mandible with M_1 – M_3 .

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Horizon and locality.—South side of Dry Hollow, sec. 5 or 6, T5N, R3E, Dunbar Creek Formation, Toston area, Broadwater County, Montana.

Age.—Orellan.

Diagnosis.—As for genus.

Etymology.—Latin, *nexusus*, intertwined; *dens*, tooth.

Description.—The mandible is relatively deep for a prosciurine. The masseteric fossa ends anteriorly in a rounded V-shape below the posterior margin of M_1 . The incisor is laterally compressed and gently convex anteriorly.

The molars increase in size from M_1 to M_3 . The basins of the molars are filled with a system of relatively high, complex lophules. M_1 is narrower anteriorly than posteriorly. The trigonid is open posteriorly. The metastylid crest occurs as the posterolingual slope of the metaconid. The single mesostylid sends an elongate loph into the center of the talonid basin. The entoconid is large, separated from the posterolophid and mesostylid by deep valleys, slightly anteroposteriorly compressed, and connected to a complete hypolophid. The mesoconid is large and triangular with a buccal mesolophid extending to the buccal margin of the tooth. The mesoconid is set well lingually into the talonid basin and is surrounded anteriorly, posteriorly and buccally by a low, flat surface of enamel. The hypoconid is large and has a sharp ridge running ventrally from its apex along the anterobuccal side of the tooth. The hypoconulid is large and near the center of the posterolophid.

M_2 is larger than M_1 with the trigonid nearly as wide as the talonid. A second mesostylid occurs anterior to the larger, principal mesostylid; a buccal lophule runs from it into the talonid basin.

M_3 , the largest molar, is rectangular in occlusal view and slightly wider anteriorly than posteriorly. The mesostylid is doubled as in M_2 . The mesoconid is rounded rather than triangular. The buccal mesolophid runs along the anterior slope of the tooth rather than directly buccally as in the anterior molars.

Discussion.—*Pseudallomys* differs from nearly all prosciurines by the presence of the network of complex lophules that fill the talonid basins of the lower teeth. Only *Ephemeromys* Wang and Heissig (1984) has similar enamel irregularity. However, the lophules in *Ephemeromys* are low, vary in height, and not strongly developed. The complete hypolophid of *Pseudallomys* is similar to that of *Haplolomys* and *Pelycomys*, but is better developed than in any other prosciurine. The presence of two separated mesostylids on the lower molars is also unique. *Cam-*

Table 1.—Measurements of the holotype of *Pseudallomys nexodens*, CM 11898. Abbreviations: a-p, anteroposterior length; tra, anterior transverse width; trp, posterior transverse width. Measurements in mm.

| | | |
|-------|-----|------|
| I_1 | a-p | 2.11 |
| | tra | 1.13 |
| M_1 | a-p | 1.93 |
| | tra | 1.62 |
| | trp | 1.97 |
| M_2 | a-p | 1.99 |
| | tra | 1.90 |
| | trp | 2.09 |
| M_3 | a-p | 2.62 |
| | tra | 1.98 |
| | trp | 1.95 |

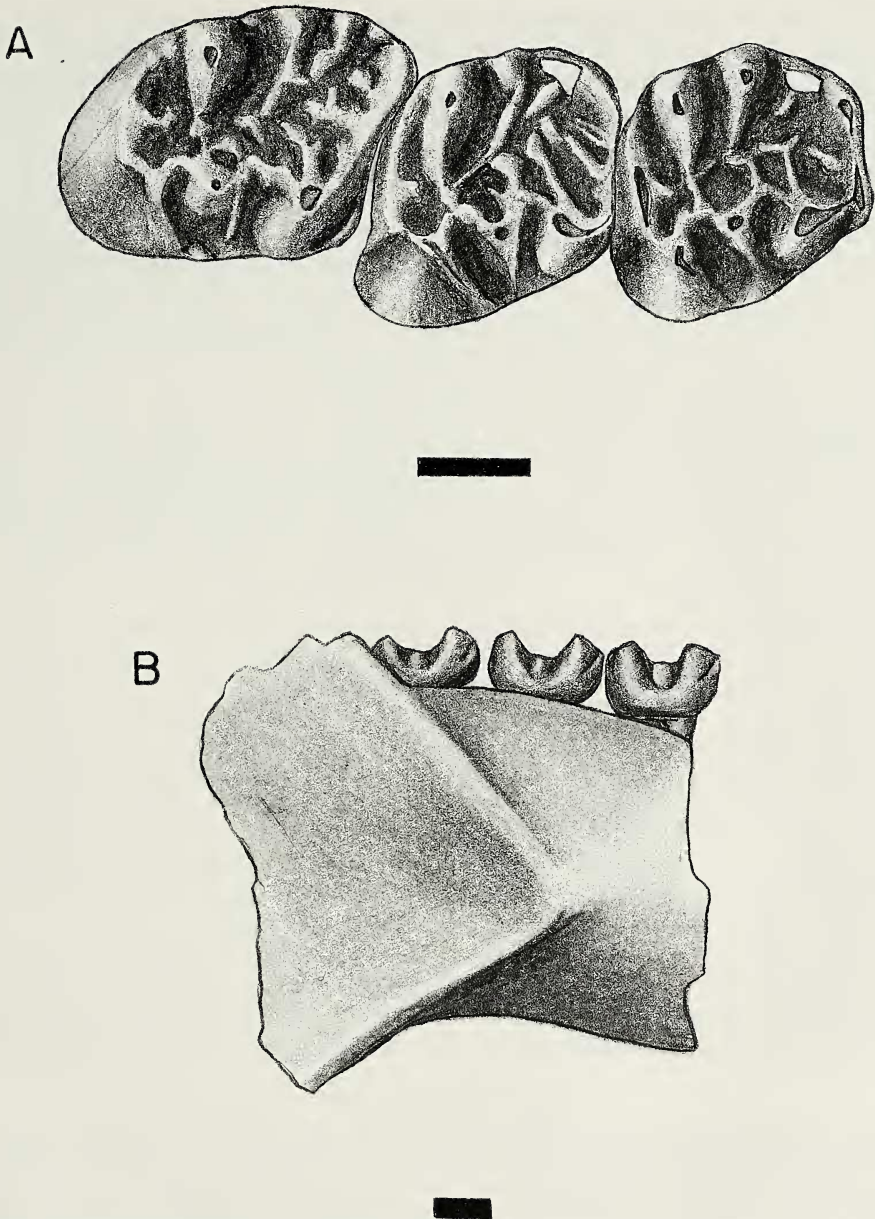


Fig. 1.—Holotype of *Pseudallomys nexodens*, CM 11898. A, Occlusal view, RM₁–M₃. B, lateral view of mandible. Bar scales below each figure represent 1 mm.

pestrallomys has multiple mesostylids, but they are closely spaced and continuous with the metastylid crest. The lack of a metastylid crest continuous with the mesostylid is similar to the condition in *Prosciurus*, *Haplomys*, and some *Pelycomys*, but distinguishes *Pseudallomys* from *Oropyctis*. The metaconid is antero-posteriorly compressed as in *Prosciurus* (Rensberger and Li, 1986).

The anterior cingulid anterior to the protoconid on the lower molars is present

elsewhere only in the Arikareean *Downsimus chadwicki* Macdonald (1970; possibly synonymous with *Allomys sharpi* Macdonald, 1970; see Rensberger, 1975). The molars of *Downsimus* increase in size posteriorly and the hypoconulid is enlarged as in *Pseudallomys*, but several features separate these two genera. The molars of *Downsimus* lack the complex of lophules present in the cheek teeth of *Pseudallomys*. The hypolophid of *Downsimus* is not complete and is anterobuccally directed, the hypoconulid is even more enlarged, the mesostylid is not doubled, the mesoconid is not as large and the low, broad shelf buccal to the mesoconid of *Pseudallomys* is not present. An anterior extension of the hypoconid and the buccal extension of the mesoconid fuse buccally on the molars of *Downsimus* to form an enclosed enamel fossettid anterior to the hypoconid. In *Pseudallomys* this area is widely open buccally, and no fossettid is formed. *Downsimus* also lacks the compressed metaconid of *Pseudallomys*.

The two shared derived features of the cheek teeth of *Pseudallomys* and *Downsimus* (anterior cingulid at the anterior base of the protoconid; enlarged hypoconulid) may indicate a closer relationship between these two genera than either has with other prosciurines. However, *Downsimus* and *Pseudallomys* are derived in separate directions; specializations in the latter (doubled mesostylids, mesoconid shelf, and the network of lophules of the lower molars) remove it from the ancestry of *Downsimus*.

The complexity of the lophules in the basins of the lower cheek teeth of *Pseudallomys* is developed to a comparable degree in a number of allomyines (see Rensberger, 1983; Schmidt-Kittler and Vianey-Liaud, 1979). However, *Pseudallomys* lacks most of the diagnostic features of the Allomyinae as defined by Rensberger (1983): 1) reduced hypolophid; 2) mesostylid continuous with meta-stylid crest; 3) posteriorly-directed crest from anteroconid; 4) enclosed fossettid anterior to hypoconid; and 5) mesoconid small and buccally placed. Allomyines also lack the *Prosciurus*-like compression of the metaconid that is present in *Pseudallomys*. *Pseudallomys* lacks all of the derived features of meniscomyines and later aplodontids (mainly hypsodonty) and possesses lophules in the basins of its cheek teeth that are lacking in these later aplodontids.

Among species of *Prosciurus*, *P. parvus* has a distinct cingulid at the base of the protoconid as in *Downsimus* and *Pseudallomys* while retaining occlusal morphology of the cheek teeth typical of *Prosciurus* (Korth, 1989). This may indicate that *P. parvus* represents an ancestral type for both *Pseudallomys* and *Downsimus*.

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